

Having thus, described the invention, what is claimed is:

- 1 1. A water jet propeller apparatus, comprising:
2 a stator defining a channel therein;
3 an impeller rotatably disposed in the stator;
4 an impeller shaft rotatably supported in the stator and connected to the
5 impeller; and
6 wherein said impeller comprises a collar for placement surrounding the
7 outer periphery of the impeller shaft, said collar being integrally formed with the
8 impeller;
9 and wherein said apparatus further comprises a water-resistant seal
10 surrounding the collar.

- 1 2. The water jet propeller apparatus of claim 1, further comprising a bearing unit
2 operatively connected to the stator and housed therein, and wherein said collar extends
3 inside a portion of said bearing unit.

- 1 3. The water jet propeller apparatus of claim 1, wherein said water-resistant seal
2 comprises two sequential annular sealing members.

- 1 4. A water jet propeller apparatus according to Claim 1, wherein the impeller shaft is
2 threadably connected to a rear portion of the impeller.

1 5. A water jet propeller apparatus according to Claim 1, wherein a drive shaft is
2 connectable to a front portion of the impeller by a spline fit.

1 6. A water jet propeller apparatus according to Claim 1, wherein the water-jet
2 propeller further comprises a shock-absorbing member provided in the impeller
3 proximate a front end of the impeller shaft to cushion a rear tip end of the drive shaft, the
4 shock-absorbing member having an outer periphery with at least one fluid passage
5 formed therein
6 said shock-absorbing member being constructed and arranged to allow a fluid to
7 flow therepast, from the impeller shaft side toward the drive shaft side, when the impeller
8 shaft is installed on the impeller.

1 7. A water jet propeller apparatus according to claim 6, wherein the shock absorbing
2 member comprises a reduced-diameter reduced-diameter fitting portion and a large-
3 diameter sealing portion, and wherein said at least one fluid passage comprises a plurality
4 of grooves formed substantially radially from said reduced-diameter fitting portion to an
5 edge of said sealing portion.

1 8. A water jet propeller apparatus according to Claim 1,
2 wherein the impeller shaft is threadably connected to a rear portion of the
3 impeller, wherein a drive shaft is connectable to a front portion of the impeller by
4 a spline fit,

5 and wherein the water-jet propeller further comprises a shock-absorbing member
6 provided in the impeller proximate a front end of the impeller shaft to cushion a rear tip
7 end of the drive shaft, the shock-absorbing member having an outer periphery with at
8 least one fluid passage formed therein;
9 said shock-absorbing member being constructed and arranged to allow a fluid to
10 flow therepast, from the impeller shaft side toward the drive shaft side, when the impeller
11 shaft is threadably installed on the impeller.

1 9. A water jet propeller apparatus, comprising:

2 a stator defining a channel therein;
3 an impeller rotatably disposed in the stator;
4 an impeller shaft rotatably supported in the stator and connected to the impeller;
5 a collar provided on the outer periphery of the impeller shaft;
6 a water-resistant seal surrounding the collar; and
7 a shock-absorbing member provided in the impeller proximate a front end of the impeller
8 shaft to cushion a rear tip end of the drive shaft, the shock-absorbing member having an
9 outer periphery with at least one fluid passage formed therein
10 said shock-absorbing member being constructed and arranged to allow a
11 fluid to flow therepast, from the impeller shaft side toward the drive shaft side, when the
12 impeller shaft is installed on the impeller.

1 10. The water jet propeller apparatus of claim 9, wherein the shock absorbing
2 member comprises a reduced-diameter reduced-diameter fitting portion and a large-

3 diameter sealing portion, and wherein said at least one fluid passage comprises a plurality
4 of grooves formed substantially radially from said reduced-diameter fitting portion to an
5 edge of said sealing portion.

1 11. The water jet propeller apparatus of claim 9, wherein the shock absorbing
2 member has a convex front face for cushioning contact with a rear tip portion of said
3 drive shaft.

1 12. The water jet propeller apparatus of claim 9, wherein the shock absorbing
2 member comprises at least one resiliently deformable lip at an outer periphery thereof.

1 13. The water jet propeller apparatus of claim 9, further comprising a bearing unit
2 operatively connected to the stator and housed therein, and wherein said collar extends
3 inside a portion of said bearing unit.

1 14. The water jet propeller apparatus of claim 9, wherein said water-resistant seal
2 comprises two sequential annular sealing members.

1 15. A water jet propeller apparatus according to Claim 9, wherein the impeller shaft is
2 threadably connected to a rear portion of the impeller.

1 16. A water jet propeller apparatus according to Claim 9, wherein a drive shaft is
2 connectable to a front portion of the impeller by a spline fit.

1 17. A water jet propeller apparatus, comprising:
2 a stator defining a channel therein;
3 an impeller rotatably disposed in the stator;
4 an impeller shaft rotatably supported in the stator and connected to the
5 impeller;
6 a collar provided on the outer periphery of the impeller shaft; and
7 a water-resistant seal surrounding the collar;
8 wherein the impeller shaft is threadably connected to a rear portion of the impeller.

1 18. A water jet propeller apparatus according to Claim 9, wherein a drive shaft is
2 connectable to a front portion of the impeller by a spline fit.

1 19. The water jet propeller apparatus of claim 1, further comprising a bearing unit
2 operatively connected to the stator and housed therein, and wherein said collar extends
3 inside a portion of said bearing unit.

1 20. A water jet propeller apparatus according to Claim 1, wherein the water-jet
2 propeller further comprises a shock-absorbing member provided in the impeller
3 proximate a front end of the impeller shaft to cushion a rear tip end of the drive shaft, the
4 shock-absorbing member having an outer periphery with at least one fluid passage
5 formed therein

6 said shock-absorbing member being constructed and arranged to allow a fluid to
7 flow therepast, from the impeller shaft side toward the drive shaft side, when the impeller
8 shaft is installed on the impeller.